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(56) Documents cited  
GB 1328765 A GB 1286576 A GB 0789807 A  
GB 0702385 A GB 0524465 A GB 0360320 A  
GB 0224624 A WO 86/04489 A US 4420894 A

(58) Field of search  
UK CL (Edition K) A3B  
INT CL<sup>E</sup> A43B

(54) Footwear

(57) An item of footwear comprises an upper (11), a sole (12) and a clamping means, the clamping means clamping a peripheral part (18) of the upper (11) to the sole (12) around at least substantially the entire periphery (17) of the sole (12).

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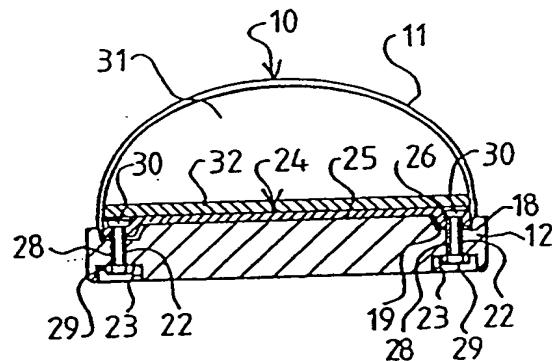
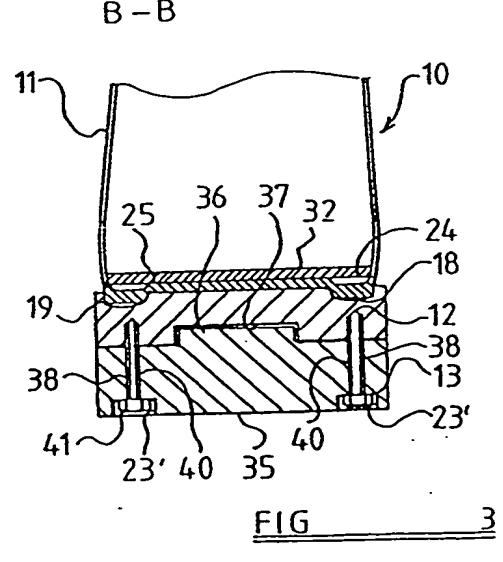
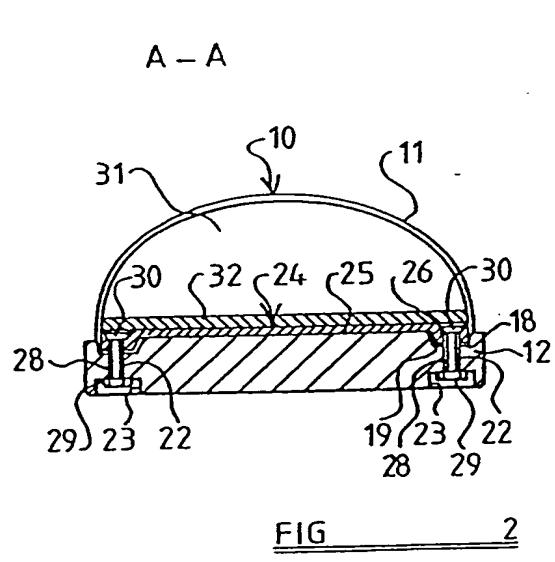
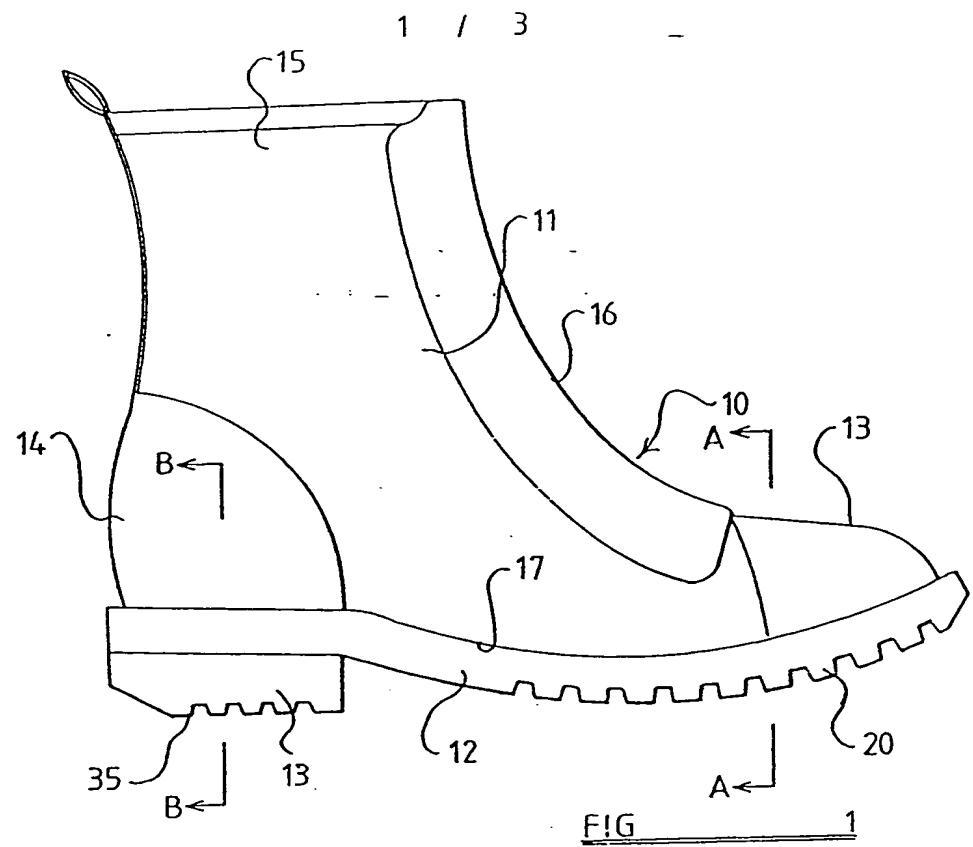
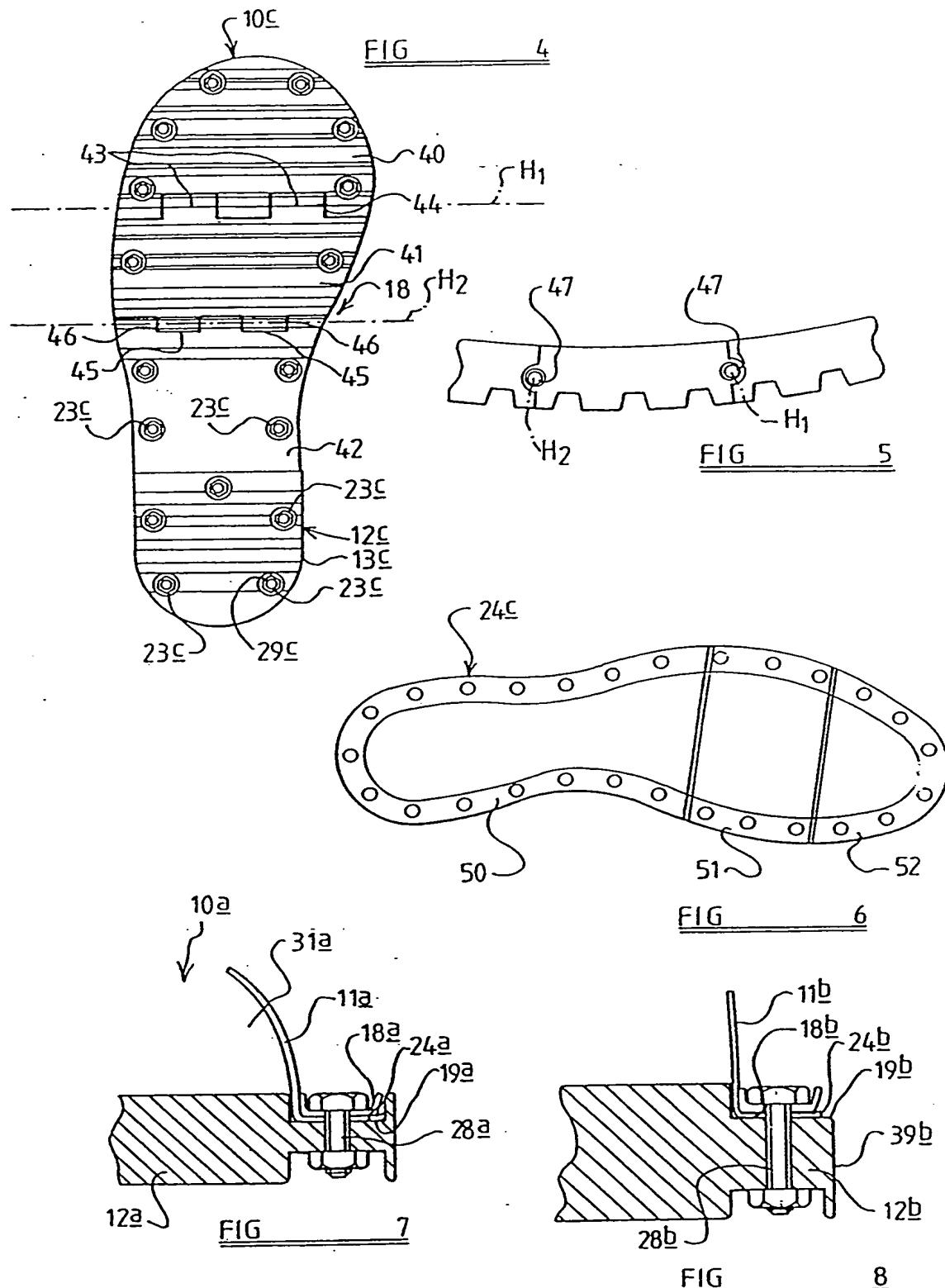


FIG 2

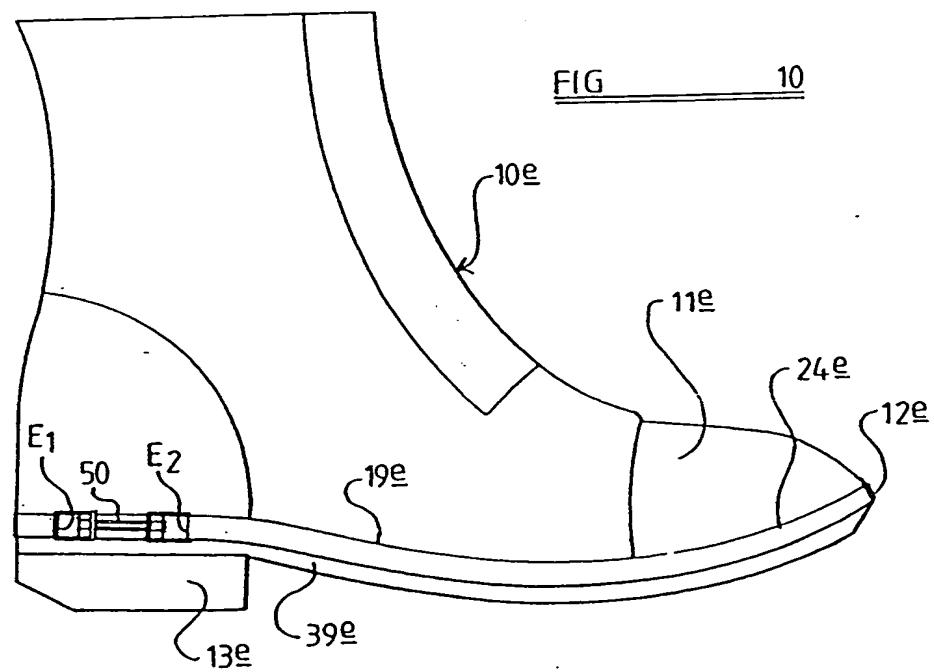
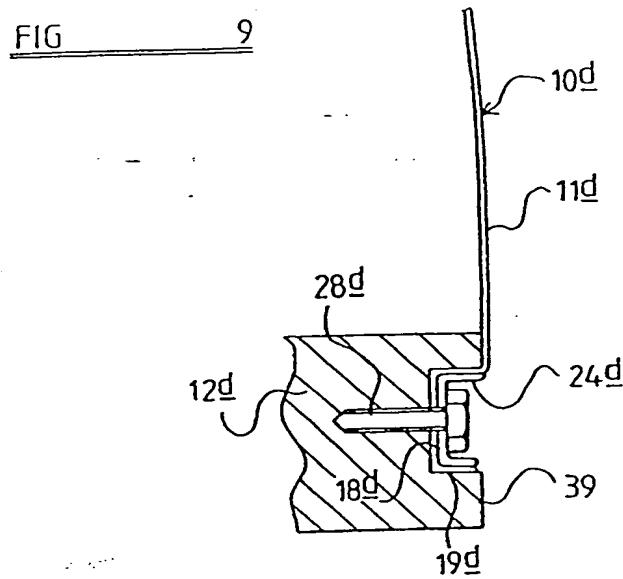
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Title: "Footwear"

Description of Invention

This invention relates to an item of footwear and more particularly, but not exclusively, to an item of footwear comprising a boot suitable for military use, or other use where the boot is required to give a foot protection in arduous or hazardous conditions.

According to a first aspect of the invention I provide an item of footwear comprising an upper, a sole and a clamping means, the clamping means clamping a peripheral part of the upper to the sole around at least substantially the entire periphery of the sole.

The invention provides an item of footwear which can be produced cheaply and quickly. Preferably the clamping means is releasable readily to permit separation of the upper and sole so that there is an ability to change either the upper or the sole to meet circumstances in which the wearer may find himself.

For example, an upper may be selected from a set of uppers, to provide protection against chemical gas, flames, ballistic projectiles, and the like, whilst the sole can be changed to provide any one of a variety of tread patterns best suited to the conditions the wearer is in.

According to a second aspect of the invention I provide a kit of parts comprising a plurality of uppers and a plurality of soles, each of the uppers being adapted to co-operate with any one of the soles, to form an item of footwear, there being clamping means to clamp a peripheral part of a selected upper to a selected sole around at least substantially the entire periphery of the sole.

According to a third aspect of the invention I provide a method of making an item of footwear comprising

taking an upper, a sole and clamping means, and clamping a peripheral part of the upper to the sole around at least substantially the entire periphery of the sole.

The invention will now be described with the aid of the accompanying drawings in which:

FIGURE 1 is a side view of an item of footwear made in accordance with the invention,

FIGURE 2 is a section on the line A-A of Figure 1,

FIGURE 3 is a section on the line B-B of Figure 1,

FIGURE 4 is an underside plan view of a sole for an alternative item of footwear in accordance with the invention,

FIGURE 5 is an enlarged side view of part of the sole of Figure 4,

FIGURE 6 is a plan view of a clamping member for use in an item of footwear having the sole of Figures 4 and 5,

FIGURE 7 is a fragmentary side sectional view of an alternative item of footwear in accordance with the invention,

FIGURE 8 is a view similar to Figure 7 but of a further alternative item of footwear in accordance with the invention,

FIGURE 9 is a view similar to Figures 7 and 8 but showing a yet still further alternative item of footwear in accordance with the invention,

FIGURE 10 is a perspective view of a yet still further item of footwear made in accordance with the present invention.

Referring to figures 1 to 3 of the drawings, an item of footwear comprises a boot 10 which, in this example, is intended for military use. The boot 10 comprises an upper 11, a sole 12 and a heel 13.

The upper 11 is made in sections, there being a toe section 13, a heel section 14 and a main section 15, the

comprises a plate portion 25 which has around its peripheral edge, a channel formation 26 which corresponds generally in shape to the recess 19. The channel formation 26 has a plurality of openings which are aligned with openings 22 in the sole 12, through which openings the shanks of fasteners comprising bolts 28 can pass. The flap 18 of the upper 11 is preferably preformed with openings to accommodate the shanks of the bolts 28 so that the bolts 28 extend through the clamping member 24, flap 18, and openings 22 in sole 12, into the recesses 23 in the bottom surface of the sole, where nuts 29 are received on the bolts 28.

Thus the sole 12 and upper 11 are secured together by the bolts 28. Heads 30 of the bolts 28 are countersunk so that the heads 30 do not extend upwardly into the boot cavity 31 in which a wearer's foot is accommodated, to interfere with the wearer's foot. Preferably an inner sole or sock 32 is provided which extends across the sole 12 within the foot cavity 31, on top of the plate portion 25 of the clamping member 24 to further protect the wearer's foot.

The heel 13 comprises a moulding or casting for example, in an appropriate material, again having a treaded region 35 on a bottom surface thereof which is preferably complimentary to the treaded region 20 of the sole 12.

A top surface of the heel 13 includes a generally rectangular formation 36 which is received in a corresponding generally rectangular recess 37 of the sole 12 to locate the heel 13 relative to the sole 12.

Further fasteners 38 extend upwardly from the bottom surface 35 of the heel 13, into the sole 12. Preferably the fasteners 38 comprise self tapping screws or the like although alternatively, threaded inserts may be provided in the sole 12 aligned with openings 40 in the

heel 13 through which the fasteners 38 pass, or where the sole 12 is made in a suitable material, the sole 12 may be provided with threaded openings to receive the fasteners 38.

Heads 41 of the fasteners 38 are accommodated in recesses 23' in the bottom surface 35 of the sole.

Thus it will be appreciated that in the example described, the flap 18 comprising a peripheral part of the upper 11 extends inwardly of the cavity 31 of the boot 10. The clamping means comprises a clamping member 24 which extends across the foot cavity 31, and has the channel formation 26 provided around the peripheral edge.

In an alternative embodiment, for example, as shown in figure 7, the recess 19a in the top surface of the sole 12a may be provided externally of the cavity 31a of the boot 10a and the flap 18a of the upper 11a may thus extend outwardly relative to the cavity 31a but be otherwise secured relative to the sole 12a by bolts 28a in exactly the same manner as the upper 11 of the boot 10 of figures 1 to 3.

In another alternative embodiment shown in figure 8 it can be seen that the recess 19b which receives flap 18b of the upper 11b, is provided at the edge of the sole 12b so as to be provided partly in a top surface of the sole 12b, and partly in a peripheral side surface 39b of the sole.

In each of the embodiments so far described, preferably about thirty bolts 28, 28a, or 28b are provided spaced around the entire periphery of the respective upper 11, 11a, 11b, to secure the upper to the sole 12, 12a, 12b, although more or less bolts may be provided as desired. Instead of the fasteners comprising bolts, other types of fasteners may be provided. For example, the fasteners may comprise headed threaded sockets which receive threaded shanks of further headed parts so that the

two heads may be urged towards one another as they are threadedly engaged so as to clamp the peripheral part 18, 18a, 18b, of the upper 11, 11a, 11b, relative to the sole 12, 12a, 12b. However, preferably the clamping means is readily releasable to permit of separation of the upper and sole.

It will be appreciated that weatherproofness of the boot 10 of figures 1 to 3, is achieved because the clamping member 24 extends across the cavity 31, and the edges are sealed relative to the upper and sole by virtue of the upper 11 being clamped between the clamping member 24 and the sole 12. If desired, some sealing material may be provided in the recess 19, and behind the countersunk heads 30 of the bolts, to further improve sealing.

In the boots 10a, 10b of figures 7 and 8, weatherproofness is achieved solely by the clamping effect of the respective clamping members 24a, 24b, although again, a suitable sealant may again be provided in recess 19a, 19b, if necessary.

In each of the examples described, the heel 13 is separate to and secured to, the sole 12. In another arrangement, the heel 13 may be provided integrally with the sole 12 if desired, e.g. integrally moulded or cast.

If desired, instead of the heel 13 being secured to the sole 12 by the fasteners 38 which extend into the sole 12, fasteners such as bolts may be provided which extend through the heel 13, through openings of the sole 12 into the recess 19 in the top surface of the sole so that the entire heel, sole, upper and clamping member structure is clamped together around the heel by the fasteners 38.

The one piece sole arrangement described is particularly suitable where the sole 12 has some flexibility. For example, where the sole 12 is made in a plastics material.

If desired, where the sole 12 is made in a more rigid material such as for example a rigid plastic or metal, the sole may comprise a plurality of separate sections connected together for relative hinging.

For example, in figure 4, a sole 12c comprises three sections, namely a toe section 40, a mid section 41, and a back section 42. The sole 12c is made out of metal, and the mid section 41 has lugs 43 each with a central cylindrical opening, which lugs 43 are received in recesses 44 of the toe section 40, and the mid section 41 also has recesses 45 in which are received lugs 46 of the rear section 42, there being hinge pins 47 extending through the lugs 43,46, and formations of the corresponding recesses 44,45, whereby the sections 40 and 42 are each hinged relative to the mid section 41. In the arrangement shown, a hinge line H1 is provided just behind where the toes of a wearer would lie, and a further hinge line H2 is provided on the ball of the foot respectively, so as to provide a natural bending movement to the sole 12c of the boot 10 as the wearer walks.

Where a clamping member is provided which is made in a sufficiently resilient material, the clamping member may comprise one piece. However, if the clamping member itself is made in a rigid material such as the clamping member 24c shown in figure 6, the clamping member 24c may itself comprise a number of parts 50,51 and 52 corresponding in number to the number of sections of the sole 12c and separated at joints which correspond in position to the hinge lines H1,H2.

In figure 4, on the bottom surface of the sole 12c recesses 23c are shown to accommodate nuts 29c of fasteners which secure the sole 12c to a heel 13c and an upper (not shown) in the same manner as in the embodiment of figures 1 to 3.

To prevent the ingress of dirt through the sole 12c via the hinges between sections 40,41,42, the lugs 43,46, and recesses 44,45, preferably have self cleaning blades. The blades are attached to the hinges and move up and down as the sole sections 40 and 42 pivot relative to sole section 41. This up and down motion provides a cleaning action to remove even compacted ground material which may become lodged with the joints between the hinged sections 40,41, and 41,42. It will be noted that the hinges provided by the lugs 43 are opposed to the hinges provided by the lugs 45.

By attaching the blades to the hinges, efficient removal of ground material is achieved.

To prevent the ingress of water or any liquid, a seal is provided between the side sections 40,41, and 41,42 made of a material suitable for the conditions in which the boot is to be worn. Such a seal may comprise an inverted V or W shaped bellows which is fitted into the hinge joints, or above the hinge joints as desired. Preferably, when the side sections 40,41,42 are connected together, the seal is continuously squeezed to provide a good seal. If necessary, a rebate may be provided in the edge of the sole sections 40,41,42, to accommodate the seal, and prevent the seal becoming detached.

In all other respects, the boot 10c may be made as described with reference to figures 1 to 3, or figure 7 or figure 8 or figures 9 and 10 as described below.

Referring now to figure 9, a sole 12d of a boot 10d is provided with a recess 19d in a side peripheral surface 39 thereof. A peripheral part comprising a flap 18d of the upper 11d is received in the recess 19d, and is clamped therein by means of a channel shaped clamping member 24d. Self tapping fasteners 28d are provided which extend into the sole 12d and clamp the flap 18d between the sole 12d and the channel shaped clamping member 14d.

If desired, threaded inserts may be provided in the sole 12d with which the bolts 28d may be engaged, or the bolts 28d may co-operate with threaded openings provided in the sole 12d.

The recess 19d may be concealed by a suitable concealing strip if desired.

The clamping member 24d may comprise a single member, or a plurality of parts as desired, but particularly where the sole 12d is of a construction such as shown in figures 4 and 5, the clamping member 24d may be provided by a plurality of separate parts which are movable to some extent, relative to one another, to accommodate hinging of the sole 12d about hinge lines H1, H2, thereof.

In figure 10, a boot 10e is shown, the upper 11e of which is made substantially the same as the upper 11d of the boot 10d of figure 9.

However the clamping member 24e, which is one piece, is not secured relative to the sole 12e by a plurality of fasteners, but rather, by means of being tensioned in recess 19e around the peripheral side surface 39e of the sole 12e.

In the example shown, tensioning is achieved by means of a bolt and nut arrangement 50 which is preferably located in recess 19e in the region of heel 13e and acts to draw together ends E1, E2 of the clamping member 24e when the bolt and nut are relatively rotated. Sufficient clamping force to clamp a flap of the upper 11e in the recess 19e is achieved by tensioning the clamping member 24e sufficiently.

The boots 10-10e and the methods of manufacturing the boots described provide for the manufacture of such boots relatively cheaply and quickly.

It is envisaged that a soldier for example may carry in his kit, a plurality of different pairs of

generally similarly made uppers 11-11e, and a plurality of different pairs of generally similarly made soles 12-12e, and heels 13-13e, at least one appropriate clamping member 24-24e, seals for sealing the joints between the sole sections 40,41,42, as appropriate, and bolts 28-28c and nuts as appropriate, so that a soldier may make up a boot 10-10e to suit particular conditions in which the soldier finds himself. For example, the soldier may select uppers made of a suitable material, for example leather, kevlar, fabric plastic, or rubber (natural and/or synthetic) to give his feet protection against chemical gas or flames or ballistic projectiles etc., and may select soles made of a suitable material and having a particular tread formation 20, and heels with corresponding tread formations 35 to give the best grip in sandy, muddy or other slippery conditions.

Thus the clamping means comprising the clamping member 24-24e and fasteners 28-28e is readily releasable to facilitate separation of the uppers and the soles.

The uppers 11-11e need not be of the configurations shown in the drawings but may be for example longer to provide protection to a wearer's legs. The invention need not be applied to an item of footwear comprising a military boot, but may be applied to any other item of footwear such as a shoe,, although some of the methods of construction described, are more suitable to applications where the aesthetic appeal of the item of footwear is unimportant.

The features disclosed in the foregoing description the following claims or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, or a class or group of substances or compositions, as appropriate, may, separately or in any combination of such features, be

utilised for realising the invention in diverse forms thereof.

CLAIMS

1. An item of footwear comprising an upper, a sole, and a clamping means, the clamping means clamping a peripheral part of the upper to the sole around at least substantially the entire periphery of the sole.
2. An item according to claim 1 wherein the peripheral part of the upper comprises a flap which extends around at least substantially the entire lower edge of the upper.
3. An item according to claim 1 or claim 2 wherein the upper is made in one piece.
4. An item according to claim 1 or claim 2 wherein the upper is made in a plurality of sections attached together.
5. An item according to any one of claims 1 to 4 wherein the upper is made in material comprising one, or a mixture of, leather, kevlar, fabric, plastic, rubber (natural and/or synthetic).
6. An item according to any one of claims 1 to 5 wherein the clamping means is releasable readily to permit separation of the upper and sole.
7. An item according to any one of claims 1 to 6 wherein the clamping means comprises a clamping member which is adapted to be fixed to the sole with a plurality of fasteners spaced around the periphery of the sole, with the peripheral part of the upper clamped between the clamping member and the sole.

8. An item according to claim 7 wherein the clamping member is a single part.

9. An item according to claim 7 wherein the clamping member comprises a plurality of separate parts.

10. An item according to any one of claims 7 to 9 wherein the clamping member comprises a plate element which extends across the top surface of the sole and a peripheral portion which clamps the peripheral part of the upper to the sole.

11. An item according to any one of claims 1 to 10 wherein the sole comprises a recess around the periphery thereof into which the peripheral part of the upper is clamped by the clamping means, the recess being provided in a top and/or side surface of the sole.

12. An item according to any one of claims 1 to 11 wherein the recess is provided in a top surface of the sole, there being a plurality of openings from the recess which extend through the sole to a recess or recesses provided in a bottom surface of the sole, each of the recesses accommodating parts of the fasteners so that the fasteners do not extend significantly outwardly of the recesses.

13. An item according to claim 12 wherein the fasteners comprise bolts having shanks which extend through the openings of the sole, the heads of the bolts being received in either the recess of the top surface of the sole or the or a respective recess of the bottom surface of the sole aligned with an opening of the sole through which shanks of the bolts extend, and co-operating threaded elements

being accommodated either in the or a recess of the bottom surface of the sole or in the recess of the top surface of the sole respectively.

14. An item according to claim 12 or claim 13 wherein the recess of the top surface of the sole is located within a foot cavity of the item wherein the peripheral part of the upper extends inwardly of the foot cavity.

15. An item according to claim 12 or claim 13 wherein the recess of the top surface of the sole is located outside of the foot cavity of the item wherein the peripheral part of the upper extends outwardly of the foot cavity.

16. An item according to any one of claims 1 to 6 wherein the sole comprises a recess in a peripheral side surface of the sole, the clamping means comprising a band which extends around the peripheral side surface of the sole, there being means to tension the band to cause the band to clamp the peripheral part of the upper between the band and the sole.

17. An item according to any one of claims 1 to 16 wherein the sole includes a treaded portion.

18. An item according to any one of claims 1 to 17 wherein the sole is made in a single part.

19. An item according to any one of claims 1 to 17 wherein the sole is made in a plurality of parts hinged together.

20. An item according to claim 19 wherein a sealing member is provided between the hinged parts to protect against the ingress of liquid.
21. An item according to claim 19 or claim 30 wherein respective hinge means between the hinged sole parts include self cleaning blades arranged to remove ground material from joints between the hinged parts.
22. An item according to any one of claims 19 to 21 where appendant to claim 9 wherein the clamping member comprises a corresponding number of separate parts.
23. An item according to any one of claims 1 to 22 wherein the sole includes an integral heel.
24. An item according to any one of claims 1 to 22 wherein a separate heel is provided which is secured to the sole.
25. An item according to claim 24 wherein the heel is secured to the sole by fasteners which extend through the heel into the sole.
26. An item according to any one of claims 1 to 25 which includes an inner sole located within the foot cavity and extending across the foot cavity from one side to the other.
27. An item of footwear substantially as hereinbefore described with reference to and as shown in the accompanying drawings.
28. A kit of parts comprising a plurality of uppers and a plurality of soles, each of the uppers being adapted to

co-operate with any one of the soles to form an item of footwear, there being clamping means to clamp a peripheral part of a selected upper to a selected sole around at least substantially the entire periphery of the sole.

29. A method of making an item of footwear according to any one of the claims 1 to 28 comprising the steps of taking an upper, a sole, and a clamping means, clamping a peripheral part of the upper to the sole around at least substantially the entire periphery of the sole with the clamping means.

30. A method of making an item of footwear substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

31. Any novel feature or novel combination of features as herein defined and/or shown in the accompanying drawings.

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Patents Act 1977  
Examiner's report to the Comptroller under  
Section 17 (The Search Report)

Application number

9026170.2

Relevant Technical fields

(i) UK CI (Edition K ) A3B

Search Examiner

J Graham

(ii) Int CI (Edition 5 ) A43B

Date of Search

12 February 1991

Databases (see over)

(i) UK Patent Office

(ii)

Documents considered relevant following a search in respect of claims

1-30

Category (see over)	Identity of document and relevant passages			Relevant to claim(s)
X	GB 1328765	ISMON	whole document	At least 1, 28 & 29
X	GB 1286576	LEA	whole document	At least 1, 28 & 29
X	GB 789807	PLOWMAN	whole document	At least 1, 28 & 29
X	GB 702385	GISSAS	see ribs 8 Figure 7	At least 1, 28 & 29
X	GB 524465	RICHTER	whole document	At least 1, 28 & 29
X	GB 360320	POUGHER	whole document	At least 1, 28 & 29
X	GB 224624	BARRETT	whole document	At least 1, 28 & 29
X	WO 86/04489	SAFFRON	whole document	At least 1, 28 & 29
X	US 4420894	GLASSMAN	whole document	At least 1, 28 & 29

Category	Identity of document and relevant passages	Relevant to claim(s)

#### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

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**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&c:** Member of the same patent family, corresponding document.

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